CALIFORNIA ENERGY COMMISSION

IFWG Task # 3—Progress Report

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Emerging Fuels and Technology Office

California Energy Commission

Presentation to

Board of Forestry and Fire Protection

March 5, 2012

Inter-Agency Forestry Working Group

- **The goal of Task #3 is defining scientifically-based guidelines for achieving sustainable forest landscapes when forest biomass is utilized for biofuels**—in terms of resiliency from disease, drought and fire, ecological function and health, and biological productivity**.**

- **CEC will also focus on economic, technological, and social sustainability.**

IFWG Approach to Task #3

- **Conduct and participate in public workshops** that examine the sustainability of woody biomass utilization from the State's public and private forests for energy production.
- **Organize and conduct field tours** of forest sites that illustrate a range of forest conditions, forest types, management objectives, and utilization outcomes.
- **Fund critical economic, policy and forest science research** affecting sustainable biomass utilization, through the AB 118 sustainability research program.
- **Develop pilot-scale case studies** of forest biomass utilization to demonstrate sustainable practices and project designs.

IFWG Task 3
Core Work Plan

1. Conduct public workshops to get stakeholder input on implementation of the Task 3 Work Plan.
2. Fund research on economic, policy and forest science questions affecting sustainable biomass utilization.
3. Develop pilot-project case studies that would demonstrate and evaluate forest biomass sustainability.
4. Based on information from research and pilot projects, develop biomass utilization sustainability guidelines.
5. **Provide funding** through the AB 118 program for forest biomass projects that integrate sustainable forest biomass harvest practices with low carbon biofuels production.

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INTEGRATED FOREST BIOMASS SUSTAINABILITY RESEARCH PROJECT

Bill Kinney, Project Manager

Emerging Fuels and Technology Office

California Forest Biomass Potential

14.2 Million Bone Dry Tons / Year

1.5 Billion Gallons of Fossil Fuel Displaced

8 Percent of CA Fuel Use

Source: CEC -500-2006-094-D, 2006

Background: California Historic Context

- **2008**: 550,000 ha burned
- **1950-1999:** average annual total burned by wildfire was 102,000 ha
- **Before 1800:** estimated annual total of 1,800,000 ha

Fire plume in the San Gabriel Mountains, Los Angeles County (taken 25 miles from the fire).

Area annually treated in CA for fuels reduction is below USFS goal of 50,000 ha/yr.

Source: Stephens et al. 2007. Forest Ecol. & Man. 251: 205–216

Will California's forests become net emitters of greenhouse gases?

Opportunities for Achieving Multiple Public Policy Goals Through an Integrated, Collaborative Approach

- Increase State's low-carbon biofuels production.
- Improve forest health and resiliency.
- Reduce GHG emissions and improve air quality.
- Increase carbon sequestration.
- Sustain and enhance forest ecosystem services.
- Sustain and enhance soils and watershed function.
- Sustain and enhance habitat and biodiversity.

Altered Forest Conditions with Frequent Fire Affect Ecological Sustainability

Untreated Forest Stand, Lake Tahoe Basin

Area with no treatment, Angora Fire, Lake Tahoe Basin: 100% mortality

Source: Safford, 2009—Angora Fire

Impacts of Fuel Reduction on Fire Behavior and Ecological Impacts

Treated forest stand, Lake Tahoe Basin

Area treated for fuels 1996-2005, 10% mortality

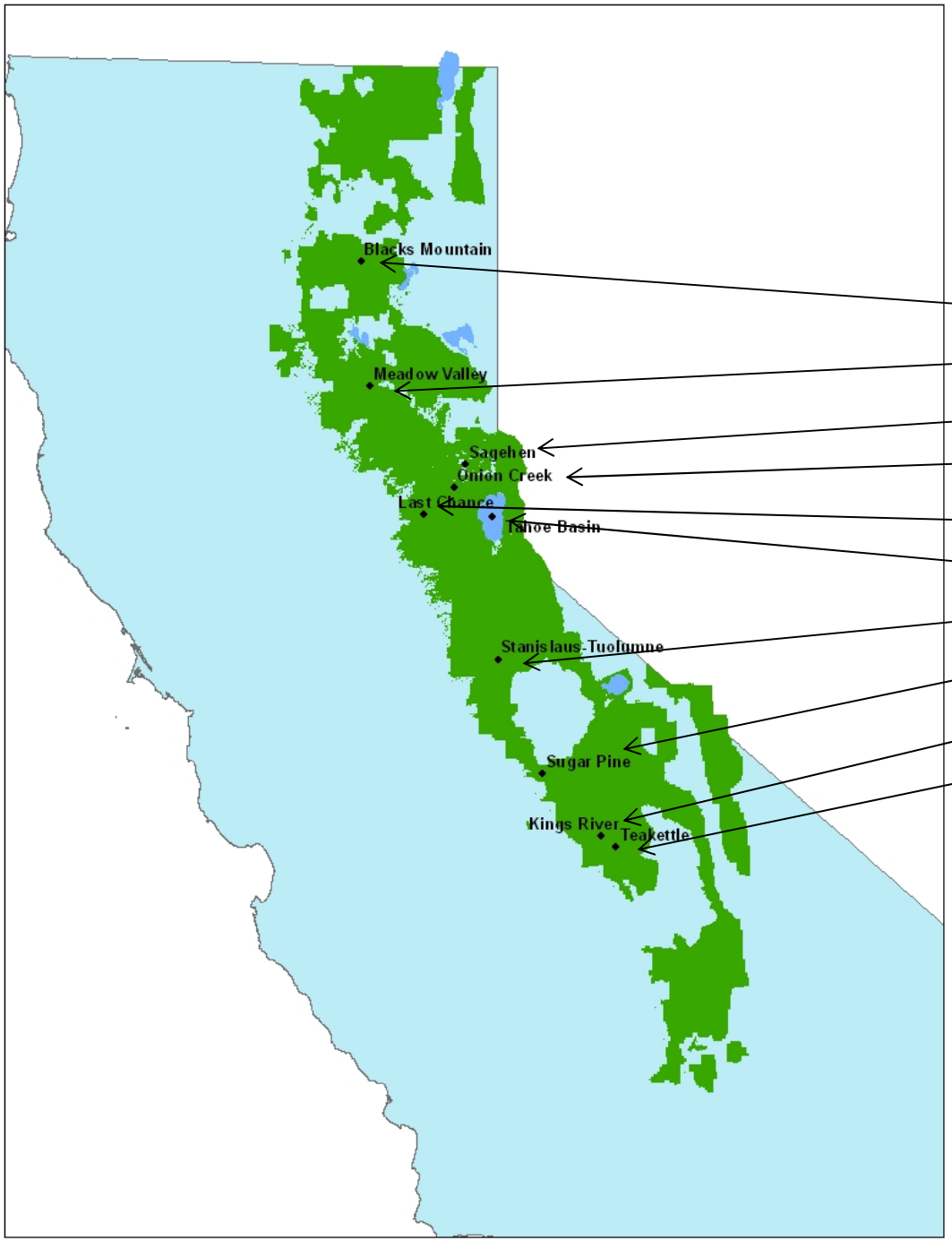
Source: Safford, 2009—Angora Fire

Research Objectives

1. **Determine the impacts of wildfire** on the sustainability of forest ecosystems **with and without treatment**, including the effectiveness of treatments in reducing adverse impacts.
2. Review and analyze the **impacts of forest fuel treatments** on soils and nutrient cycling, watershed function, wildlife and biodiversity.
3. **Life Cycle Analysis** (LCA) of both treated and untreated forest landscapes, and of alternative fuel conversion and biomass utilization pathways.
4. **Benchmarking** state and federal management guidelines with 3rd party forest **certification systems** and protocols.
5. **Economics of forest biomass utilization including**:
   - Site-specific analyses of feedstock acquisition, supply, and facility location.
   - Market analysis of feedstock allocation across competing uses.
   - Landowner behavior under proposed carbon crediting initiatives.
6. **Developing detailed case studies of 4-6 study sites.**

Guidelines / Sidebars for Analysis

- Temporal Scales: 20-50 years
- Spatial Scales: 100-10,000 acres
- Examine a Range of Forest Conditions/Types
- Both Public and Private Land Examples
- **Field Data and Case Studies Must Drive Life Cycle and Economic Models**



Active Forest Research Sites on National Forest Lands

Blacks Mountain EF
Meadow Valley
Sagehen EF
Onion Creek EF
Last Chance (SNAMP)
Lake Tahoe Basin
Stanislaus Tuolumne EF
Sugar Pine (SNAMP)
Kings River
Teakettle EF

Potential Case Study Sites on Public Lands

Private Forest Landowner Sites

- **Blodgett Experimental Forest** as Proxy—Treatment Prescriptions Will Simulate Private Landowner Management.

- Other?
  - **Recruiting Private Forest Landowners**
  - **Looking for owners** interested in a multi-year study of sustainable harvest and thinning practices on their forest lands.

TASK EXAMPLES

Overview

• Forest biomass removal has many ecological benefits for forests: reduced potential wildfire severity, increased future carbon storage and ecosystem restoration—increasing ecological services from forest lands.

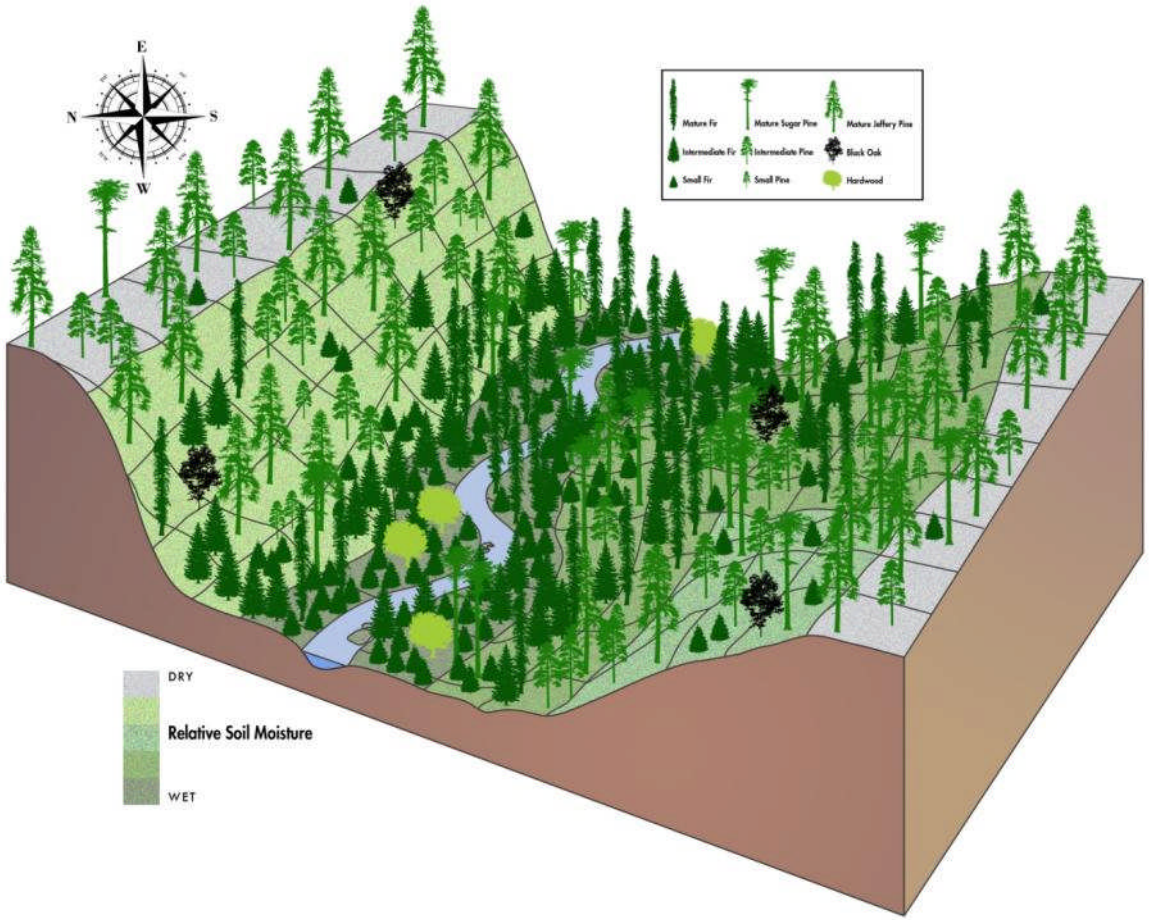
• Treatments must be economically viable, which means thinning some intermediate-sized trees, and not harming sensitive wildlife.

• Management which uses topography to mimic the forest and fuel conditions that would have been created by low-intensity, frequent fire, may provide the forest conditions needed for sustaining TES habitat across a landscape.

• For environmental stakeholders this model can provide planning transparency and a tool for site verification of sustainable implementation.

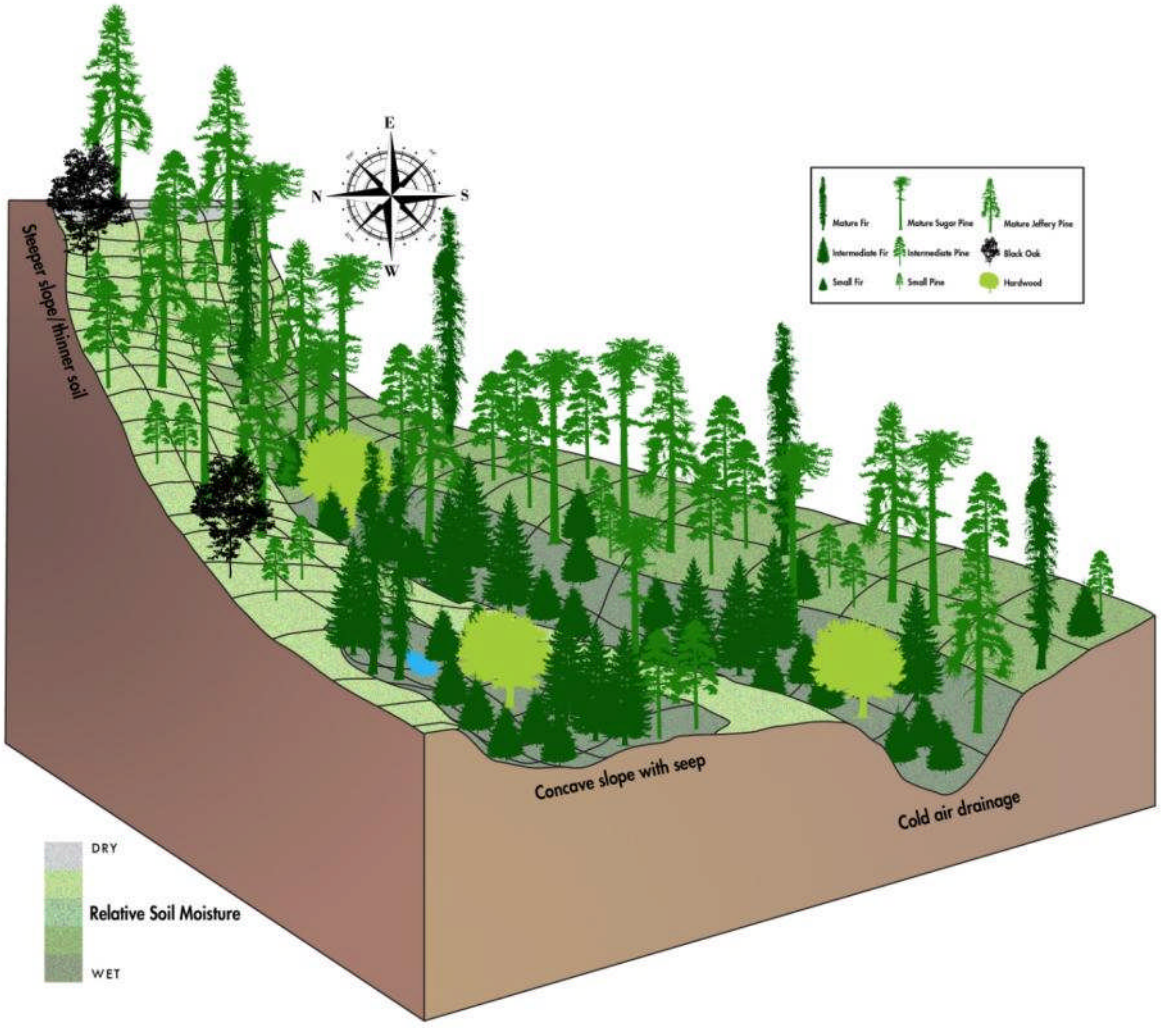
Proposed Strategy: Using Topography

Landscape schematic of variable forest conditions produced by management treatments that vary by topographic factors such as slope, aspect, and slope position. Ridgetops have the lowest stem density and highest percentage of pine in contrast to riparian areas. Midslope forest density and composition varies with aspect: density and fir composition increase on more northern aspects and flatter slope angles. Riparian forest provide high canopy cover movement corridors.



Use Topography to Vary Forest Structure, Fuel Loads, and How Much Biomass is Removed

Stand-level schematic of how forest structure and composition would vary by small-scale topography after treatment. Cold air drainages and traps would have high stem densities, more fir and hardwoods and could provide TES habitat. With increasing slope, stem density decreases and species composition becomes dominated by pines



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Angora Fire Field Trip
Meyers, California

Hosted By:

Lake Tahoe Basin Management Unit

California Energy Commission


Fire Progression
6/24/2007 - 6/26/2007
Angora Incident
CA TMU-011011
DIV E
DIV D
BRANCH II
DIV S
BRANCH I
DIV C
DIV V

Questions?

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